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EXAMINER	
PAUL, ANTONY M	

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2837	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,289	CLOTHIER ET AL.	
	Examiner	Art Unit	
	ANTONY M. PAUL	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _08 July 2008_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-5,7-16,18-20,28 and 29_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-5,7-16,18-20,28 and 29_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _04 August 2006_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _02/07/2008_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Claim Objections

1. Claim 16 is objected as the phrase, "a computer readable medium" is not explicitly stated in the applicant's original disclosure.

2. Claims 7, 8, 13, 14, 15 and 18 are objected to under 37 CFR 1.75(c) as being in improper form because of multiple dependent claims 7, 8, 13, 14, 15 and 18. See MPEP § 608.01(n). Accordingly, claims 7, 8, 13, 14, 15 and 18 not been further treated on the merits. For examination purpose examiner examined these claims based on claims 7, 8, 18 depending from claim 1 and claims 13, 14, 15 depending from claim 9.

Claim Rejections – 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 3, 4, 5, 7, 9, 10, 11, 12, 14, 15, 16, 18, 19, 28 and 29 rejected under 35 U.S.C. 102(b) as being anticipated by Kaplan et al. (6, 819, 008).

In regard to claims 1, 9, 18 and 19, Kaplan et al. disclose in figs. 5-6 a control map (see figs.4-5, step 51, map, col. 2, lines 52-56 & col. 6, lines 57-66) for a controller [40] of an electrical machine such as a switched reluctance machine [20] (driven by a motor [11], fig.1) having a rotor [24] and at least one electrically energisable phase winding [A1A2, or B1B2 or C1 C2] (see fig. 2), the control map comprising a predetermined advance angle profile representing energisation of the phase winding

with respect to angular position of the rotor over a range of rotor speeds (map includes operating parameters such as turn on & turn off conduction angles to energies phase windings [A-C] (fig.2) of said machine [20] associated with a range of rotor speeds [1000rpm to 5000 rpm], see col. 7, lines 6-26) and an angle correction factor to be applied to a predetermined portion of the advance angle profile (such as fig. 8 shows adjustment/compensation of conduction angles in order to maintain a desired power output, see col. 8, lines 19-62, application of angle correction factor is taught in the adjustment of conduction angles where turn on and turn off angles are increased or decreased to achieve the desired power, (see col. 9, lines 6-20), wherein the angle correction factor depends on a difference between a measured input power to the machine and a predetermined input power at a predetermined rotor speed

(Kaplan et al. disclose in figs 1-2 operation of an electrical machine [20] using data mapping, where an angle correction such as adjustment or compensation of conduction angles based on a difference between a measured input power [actual measured power] and a predetermined input power [desired power] (actual measured power [line 76] and desired power [line 71] is inputted to a comparator [75] for calculating the difference there between, see figs. 8-9, col.8, lines 31-67 and col. 9, lines 1-47) at a predetermined rotor speed such as rotor speeds from [1000rpm to 5000rpm] (a desired operating parameter set in a control map, col. 7, lines 6-37).

Further in regard to claim 9, measuring input power to the machine (phase currents measured, col. 2, lines 18-19, controller [40] receives magnitude of currents from leads [20a] and voltage magnitude from leads [30a], fig.1, col. 3, lines 8-34);

In regard to claims 2 & 4, a control map, in which the advance angle profile includes on and off advance angle data for a predetermined range of rotor speeds (Kaplan et al. shows in figs. 5-6, a control map includes operating data or parameters such as turn on angles and turn off angles for a predetermined range of rotor speeds such as [1000 rpm to 5000 rpm] (col.7, lines 6-26; adjustment of conduction angles by varying both turn on and turn off angles, which are advanced, see col. 9, lines 6-20).

In regard to claims 3 & 5, control map, in which the angle correction factor is applied to the on and off advance angle (Kaplan teaches angle correction factor such as in the adjustment or compensation of conduction angles based on adjusting power, where the turn on and turn off angles are increased or decreased to achieve said adjustment (see col. 8, lines 31-67 & col. 9, lines 1-20, fig.8).

In regard to claims 7 and 12, Kaplan et al. shows in figs 5-6 a control map, in which the angle correction factor comprises a change in angle required to reduce the discrepancy between the predetermined input power and the measured input power to within predetermined limits (Kaplan teaches adjustment/compensation of conduction angles (fig.8) to reduce the discrepancy between the predetermined input power and the measured input power to within predetermined limits such as to maintain an actual measured power at or near a desired power so as to avoid undesirable variations in the amount of power in a machine system [10] (angles adjusted by varying turn on/off angles, see col. 8, lines 19-67 & col. 9, lines 1-20).

In regard to claim 10, Kaplan et al. teaches a method, in which the winding [A-C] (fig.2) is energized in accordance with the advance angle profile [turn on/off angles in

the map, figs. 5-6] at a predetermined speed, which speed is associated with the predetermined input power (map includes, predetermined rotor speeds, powers such as DC excitation voltages, col. 7, lines 5-26).

In regard to claim 11, Kaplan et al. teaches a method, in which the step of producing the angle correction factor includes applying predetermined incremental changes to the advance angle profile (Kaplan et al. teaches adjustment of conduction angles based on power wherein the turn on/off angles are varied based on a difference of power, col. 9, lines 5-19) measuring the input power after each incremental change (conduction angles are adjusted associated with an increase or decrease of power, col. 8, lines 51-67 & col. 0, lines 1-5) and comparing the measured input power with the predetermined input power (fig. 9 shows a comparator comparing a measured power [line 76] with a predetermined such as a desired power [line 71] (col. 9, lines 21-47).

In regard to claim 14, Kaplan et al. teaches (figs 1-2, 5-6) transmitting the angle correction factor such as adjusted conduction angles from a map is provided to the controller [40] by means of radio frequency signals such as voltages signals applied at leads [30a-b] (any voltage or current signal has a frequency such as energisation of phase windings occur at a controlled frequency, col. 1, lines 43-44).

In regard to claim 15, Kaplan et al. teaches a method, in which the input voltage [30a-b] applied to the phase winding [A-C] (fig.2), is substantially constant (same amount of current applied to a dc bus [30a] associated with a constant power, col. 6, lines 1-18).

In regard to claim 16, a computer readable medium comprising a computer program stored thereon (flow charts, figs 4, 8) for controlling a machine [20] (Kaplan et al. teaches usage of computer simulations, see col. 7, lines 27-47, col. 8, lines 19-21).

In regard to claims 28 and 29, angle correction factor such as adjusted conduction angles are applied to both the turn on and turn off angels as taught by Kaplan et al. (col. 9, lines 6-8).

Claim Rejections – 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ookawa et al (5, 796, 226) in view of Kaplan et al.

In regard to claims 1, 9 and 18, Ookawa et al. disclose in (fig.1) a control map such as a memory map [13a, 13b,13c] for a controller [ECU] of an electrical machine [1] having a rotor [R] (figs.18, 20), at least one electrically energisable phase winding [1a], control map [13a, 13b,13c] comprising predetermined advance angle profile (see table 1-3, column 14, lines 18-67, column 15, lines 1-40) representing energisation of the phase winding [1a] with respect to angular position of the rotor [R] (see, column 7, lines 20-54, column 10, lines 6-9) over a range of rotor speeds (table 1, column 13, lines 23-

67, column 14, lines 18-50, column 15, lines 42-60, column 16, lines 28-36), and an angle correction factor (column 16, lines 5-19, see figs. 4a,5a-b,19) to be applied to a predetermined portion of the advance angle profile such as in a control map [13a, 13b,13c] (angle correction, see column 15, lines 20-40).

Further in regard to claim 9, measuring input power to the machine (current sensors [2-4] measure currents in the coils [1a-1c], where the current is proportional voltage, see col. 7, and lines 33-45)

Ookawa et al. do not mention angle correction factor depends on a difference between a measured input power to the machine and a predetermined input power at a predetermined rotor speed.

Kaplan et al. disclose in figs 1-2 operation of an electrical machine [20] using data mapping, where an angle correction factor such as in the adjustment or compensation of conduction angles based on a difference between a measured input power [actual measured power] and a predetermined input power [desired power] (actual measured power [line 76] and desired power [line 71] is inputted to a comparator [75] for calculating the difference there between, see figs. 8-9, col.8, lines 31-67; turn on and turn of angles are increased or decreased to achieve a desired power, see col. 9, lines 1-47) at a predetermined rotor speed such as rotor speeds from [1000rpm to 5000rpm] (see, col. 7, lines 6-37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the angle adjustment based on a difference of powers of

Kaplan et al. in the system of Ookawa et al. because an improved operating method of a switched reluctance machine at a high efficiency is achieved (col. 1, lines 12-15).

In regard to claims 2 & 4, Ookawa et al. teaches advance angle profile such as a control map [13a, b, c] includes on/off angle data for a predetermined range of rotor speeds such the rotor revolutions shown in tables 1-2 of said map [13a, b, c] (col. 13, lines 23-67, col. 14, lines 1-34, col. 15, lines 20-66, col.16, lines 1-36, figs. 19, 21-22).

In regard to claims 3, 5, 28 and 29, Ookawa et al. teaches angle correction factor applied to the on and off advance angle such as angle correction is an advance value (see fig. 19, col. 15, lines 20-66 & col.16, lines 1-36) calculated for both an energisation on and off angles in a control map [13a, b, c] (angle correction for commanded angles, see figs 5a-b; advance off angle, see fig.22; angle correction is applied to the rotation angle of a rotor [R] shown in figs.18, 20).

In regard to claims 7 and 12, Ookawa et al. teaches angle correction factor such as an advance angle correction (see fig. 19 & explanation in claim 3).

Ookawa et al. do not mention change in angle required to reduce the discrepancy between the predetermined input power and the measured input power to within predetermined limits.

Kaplan teaches adjustment/compensation of conduction angles to reduce the discrepancy between the predetermined input power and the measured input power to within predetermined limits such as to maintain an actual measured power at or near a desired power so as to avoid undesirable variations in the amount of power in a

machine system [10] (angles adjusted by varying turn on/off angles, see col. 8, lines 19-67 & col. 9, lines 1-20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the angle adjustment based on a difference of powers of Kaplan et al. in the system of Ookawa et al. because an improved operating method of a switched reluctance machine at a high efficiency is achieved (col. 1, lines 12-15).

In regard to claims 8 and 13, Ookawa et al. teaches a method using figs.1 storing the control map [13a, 13b, 13c] in a memory (RAM, fig.4b, column 20, lines 55-60, column 13, lines 59-67) in the controller [ECU] (column 7, lines 53-55 & column 20, lines 1-20). The other limitations for the base claim are explained in claim 1.

In regard to claim 10, Ookawa et al. teaches a method, in which the winding such as phase coils [1a-1c] is energized in accordance with the advance angle profile such as the energisation on/off angles stored in the memory map [13a, 13b,13c] at a predetermined speed such the range of rotor revolutions in said memory map [13a, 13b,13c] (see tables 1-2, col. 13 &14), which speed is associated with the predetermined input power such as predetermined reference voltage [Vr2] (see (fig.2), voltage [Vr2] is associated with a current feedback signal [S6] measured by a current sensor [2], where in the measured current is proportional to voltage, see col. 7, and lines 33-45, memory map includes energisation information, current supply, current waveform data, see col. 14, lines 1-65).

In regard to claim 11, Ookawa et al. teaches a method, in which the step of producing the angle correction factor (fig.19, column 15, lines 20-32) includes applying

predetermined incremental changes (incremental angle, see column 11, lines 43-58) to the advance angle profile such as the energisation on/off angle information in the memory map [13a, 13b, 13c] (column 20, lines 1-20, lines 41-48, column 14, lines 18-34) and comparing the measured input power with the predetermined input power (such as fig. 2 shows a current sensor [2] measuring input power such as the current/voltage (current is proportional to voltage) in a phase coil [1a] and the measured current signal [S6] is compared at a comparator [7a] having a predetermined reference voltage [Vr2]).

In regard to claim 14, Ookawa et al. teaches a method further comprising transmitting the angle correction factor to the controller [ECU] by means of radio frequency signals (any waveform signal such as a current waveform (figs 10, 17, 21a-c) has a frequency associated with the revolution of a rotor [R] of a motor (fig.18) and data such as advance angle correction factor (fig.19), waveform pattern (see table 3, column 13, lines 23-32, column 14, lines 35-65) is accessed from memory map [13a, b, c] by a controller such as an [ECU] (figs.1a-b).

In regard to claim 15, Ookawa et al. teaches a method in which the input voltage such as [Vs6] (fig.2) applied to the phase winding [1a] is substantially constant as the speed and torque of a motor [SR] is constant (see column 15, lines 13-15) and current is proportional to voltage (column 7, lines 42-45, a constant current compensation value [CP1] is applied to three phases, see column 17, lines 58-59).

In regard to claim 16, Ookawa et al. teaches a computer readable medium such as a CPU 11 (fig.1b) comprising a computer program such as a flow chart (column 5,

lines 40-41) stored thereon (memory, column 7, lines 53-55, column 8, lines 54-58, column 13, lines 59-63) for controlling a machine [1].

In regard to claim 19, machine [1] is a switched reluctance motor (col.1, lines 55-58).

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ookawa et al. as applied to claim 18 and in view of Elliott et al. (US 6,313,597).

In regard to claim 20, Ookawa et al. do not mention a cleaning device incorporating an electrical machine.

Elliot et al. disclose in fig. 2 a cleaning device [19] incorporating an electrical machine [12] (column 3, lines 66-67).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the cleaning device of Elliot et al. in the system of Ookawa et al. because a floor cleaning appliance is started with reduced torque and thereby reducing stress on a motor (column 2, lines 16-19, column 4, line 67 and column 5, lines 1-3).

8. Claim 8, 13 and 20 are rejected under 35 U.S.C. 103(a) as obvious over Kaplan et al.

In regard to claims 8 and 13, storing the control map in a memory in the controller is obvious in that operating parameters such as turn on/off conduction angles, rotor speed range information, excitation voltage information are constructed in the map (figs 5-6) and accessed by a controller [40] in fig.1 to operate a machine [20]).

In regard to claim 20, a cleaning appliance incorporating an electrical machine is obvious in that an electrical motor is used in variety of cleaning appliances such as a vacuum cleaner is well known.

Response to Arguments

9. Applicant's arguments with respect to claims 1-16, 18-20 have been considered but are moot in view of the new ground(s) of rejection. Applicant canceled claims 6, 17 and 21-27.

Information disclosure statement

Examiner acknowledges the receipt of prior art documents submitted by applicant on dates 02/07/2008 and 08/04/2006.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTONY M. PAUL whose telephone number is (571)270-1608. The examiner can normally be reached on Mon - Fri, 7:30 to 5, Alt. Fri, East.Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benson Walter can be reached on (571) 272-2227. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Antony M Paul/
Examiner, Art Unit 2837 09/26/2008

/Walter Benson/
Supervisory Patent Examiner, Art Unit 2837